WORK AND SAFETY PLAN

Cooperative Gypsy Moth Project
For Central Indiana
2007

1.0 Personnel / Organization

This project is conducted by the Indiana Department of Natural Resources (Division of Entomology and Plant Pathology and the Division of Forestry) with cooperation from the USDA, Forest Service and the USDA, Animal and Plant Health Inspection Service

1.1 STATE ENTOMOLOGIST - Overall responsibility for the project under Indiana law with authority to initiate and stop the project at any time.

1.2 STATE FORESTER - Provides contract administration and cooperation between and with the USDA - Forest Service.

1.3 FOREST HEALTH SPECIALIST (Div. Forestry) - Provides supervision of the project in conjunction with Supervisory Entomologist and Forest Entomologist; prepares and reviews environmental assessment; assists with public meetings; prepares and assists with treatment and contract; assists with biological evaluation; and coordinates and administers safety-security plan.

1.4 SUPERVISORY ENTOMOLOGIST (Div. Entomology) - Provides supervision of the project in conjunction with Forest Health Specialist and Forest Entomologist; prepares and reviews environmental assessment; conducts public meetings; coordinates public notification; coordinates and administers treatment and contract, assists with biological evaluation; and coordinates and administers safety-security plan.

1.5 FOREST ENTOMOLOGIST (Div. Forestry) - Provides supervision of the project in conjunction with Forest Health Specialist and Supervisory Entomologist; conducts biological evaluation of the project; prepares treatment boundaries; provides GIS support for the project; conducts pre treatment assessments for boundaries and aerial safety concerns; and assists in safety-security plan administration.

1.6 NURSERY INSPECTOR (Div. Entomology) – Assists with public meetings and public notification, assists and conducts biological evaluation, assists with safety-security plan, conducts treatments serving as treatment site observer, treatment site coordinator.

1.7 TREATMENT SITE OBSERVER - Monitors aerial application of treatment material from the ground; observes aircraft for proper operation of treatment equipment; documents and reports defective nozzle operation; sets and retrieves spray deposit cards; record weather information (temperature, humidity and wind speed) and foliage expansion; records start and completion time of application; maintains radio contact with applicator; and communicates to people within treatment site.

1.8 TREATMENT SITE COORDINATOR - Conducts activities of treatment site observer; coordinates activities of treatment site observers; maintains radio contact with contractor and observers; approves start of application to the treatment site and release of the pilot to go to the next treatment site and records all activities of the treatment site.

1.9 LOAD SITE OBSERVER - Observes and records mixing and loading of treatment material; performs check of treatment equipment on aircraft for compliance with contract specifications; records amount of treatment material loaded and remaining after application; views digital application files for accuracy of application & advise applicator of any errors or problems; records other data on aircraft and pilot conducting each application; and coordinates project communications among treatment site observers and other staff involved in the treatment.

2.0 CONTRACTOR - Responsible to know and meet all state and federal regulations regarding treatment material use and aerial application; comply with specifications of the contract; to provide a safety plan for spills and safety equipment for his employees; to provide security for aircraft and treatment materials, and to conduct pre application safety meeting and fly-over of the site.

The Forest Health Specialist, Supervisory Entomologist, and Forest Entomologist are responsible for administering the treatment operation and the safety-security plan.

The use of ‘state agent’ in this plan refers to the personnel listed above in 1.3 to 1.9.

2.0 Treatment Areas

The project has 1 treatment site totaling 299 acres in Delaware County (Table 1). The boundaries of the site are selected by natural features, other features such as roads and by the location of gypsy moth identified by the state survey. The boundaries are drawn into the GIS and checked by ground survey. The digital boundaries of the treatment sites are downloaded to the Slow-The-Spread (STS) Program and prepared for transfer to the navigation systems of the spray aircrafts. The navigation system will guide and record the flight path of the aircraft and application of the treatment material.

Table 1. Proposed Treatment Site for 2007.

COUNTY	TREATMENT SITES By Treatment Method			TREATMENT ACRES By Treatment Method		
	Mating Disruption	Btk Aerial	Ground Treatment **	Mating Disruption	Btk Aerial	Ground Treatment **
Delaware (Nebo)	0	1	0	0	299	0
Cooperative Project by Treatment	0	1	0	0	299	0
Total Cooperative Project	1			299		
State Project by Treatment	0	0	0	0	0	0

** Ground treatment is not part of the cooperative project.

2.1 Description of the Proposed Sites

Delaware County: There are approximately 263,600 acres in Delaware County and 13,200acres of forest that contain both favorable and unfavorable host species.

Nebo: The proposed treatment site contains 299 acres. The site is primarily urban forests and trees associated with urban residential areas and adjacent farmland. The forest contains oak, hickory, maple, ash, conifers, shrubs and other hardwoods. Houses are within the site and there is an electrical substation and radio tower adjacent to the site. The site was detected in 2006 and survey detected egg masses. The survey indicates a low level gypsy moth population, and Btk is proposed for the site because the population is above the threshold for application of mating disruption and mass trapping.

3.0 Pre-treatment Operation

3.1 Biological Monitoring

A. Egg masses are monitored near or in the treatment site(s) to determine the date of egg hatch. This is used to aid in determining the time of first application for Btk and to aid in determining the time of male moth emergence for the application of pheromone flakes (mating disruption).
B. Larvae observed in the sites will have their stage of development determined. When approximately 25-50% of the larvae are 2nd instar, the first application of Btk is applied. The larval development will also be used to determine when pupation could occur, which will aid in determining the application time for pheromone flakes. For the Btk treatment sites, foliage expansion will be monitored so that an adequate target is available for Btk to deposit on to. Oak foliage will be used to guide foliage expansion. When expansion is near 50%, the first application will be applied. Other tree species in the project site will be monitored, also. Species such as sugar maple will also be used to determine the first application, especially if they are the major component of the over story.
C. The first application of Btk will be from mid April through mid May depending on weather. The earliest recorded male moth catch date and the above information will be used to determine the time for application of the pheromone flakes, which could be from mid June through early July.

3.2 Calibration and Characterization

A. Treatment equipment cleaned prior to application.
B. For Btk, clean nozzles installed and in line screen, clean and no finer than 30 mesh.
C. Aircraft calibrated and characterized prior to application.
D. Tanks, hoses and pump on treatment aircraft checked for leaks before the treatment material is loaded.
E. The swath width used during application is determined in consultation with the state entomologist and USDA Forest Service using the swath width defined from characterization.
F. Contractor will upload the most recent and correct GIS files of the treatment sites into the aircraft navigation system and verify that the navigation system will accurately guide the treatment applications.
G. An aircraft safety check at time of calibration and characterization and at the time of loading for each application.
H. Testing and designation of radio frequencies for ground to air communication conducted at pretreatment meetings and at the time of loading for the application.

3.3 Pre-treatment Training

A. Contractor:
   1. The contractor will view the treatment site from the ground and/or air prior to the application with an agent of the State Entomologist to familiarize the contractor with the boundaries, hazards and other safety concerns.
   2. The contractor will provide a spill plan.
   3. Review the following information provided by the contractor to the State Entomologist:
      a) Nozzle type/number and number of nozzle per aircraft for Btk
      b) Swath width
      c) Gallon per minute for Btk
      d) PSI for Btk
      e) Height about project area
      f) Air speed during application
      g) Pilot name and license # (FAA & Pesticide), years of experience
      h) Aircraft type/model/number (FAA)
      i) Treatment materials applied through treatment equipment just prior to this project for Btk.

B. Observers:
   1. Familiarize observers with treatment site boundaries, hazards, school bus schedule and other safety concerns.
   2. Instruct observers in placement and retrieval of spray deposit cards for Btk.
   3. Instruct observers in radio and all phone operation and communication procedures.
   4. Instruct observers in the use of monitoring procedures and equipment - temperature/humidity meter, wind meter and foliage expansion measure.
   5. Instruct observers on procedures for an emergency.

4.0 Treatment Operations

4.1 Communications

A. Aircraft pilot to treatment site
   1. The contractor provides radios for DNR employees to communicate with the pilot. Or, the contractor installs the DNR radio frequency or radio into the aircraft. Or, the contractor meets communication requirements of the USDA Forest Service for the application of pheromone flakes.
   2. Radio communication is established at each treatment site between the pilot and treatment site observer or treatment site observer/coordinator.
   3. Radio communication is used –
      a) to give contractor clearance to start application at the treatment site;
      b) to communicate malfunctioning treatment equipment;
      c) to communicate start and stop points for flight lines;
      d) to communicate any skips or misses;
      e) to communicate any hazards, safety concerns or other problems within the treatment site;
      f) to stop application for safety and weather condition reasons;
      g) and to release pilot and aircraft to move to the next site.

B. Between treatment sites
   1. Radios and cellular phones will be used to notify each treatment site of the application progress, when the aircraft is moving to the next site, when the application is completed, any safety concerns and emergency situations.
   2. Cellular phones will be used to communicate to local emergency service agencies.

C. Central communications
   1. One person will be assigned to take phone calls at a central phone number for the project.

4.2 Treatment Schedule and Constraints

A. Refer to Section 3.1 - Biological Monitoring for the time of application.
B. Second application (if applicable as per project preferred alternative for the site) of Btk is made no sooner than four days after the first application.
C. Start date will be determined by the State Entomologist and the contractor given a minimum of 48 hours notice before first application.
D. First application of Btk will be made when 25-50% of the gypsy moth larva are 2nd instar size. This is estimated to be between mid April and mid May.
E. For pheromone flake, application will be made 1-2 weeks prior to historical date of first male moth catch from detection surveys. This is estimated to be between mid June and early July.
F. Applications will be made under the supervision and authority of the State Entomologist or his agent in coordination with the USDA Forest Service and USDA-APHIS.
G. The State Entomologist or his agent must be present at the time of each application and will give the order to stop, start or alter application.

H. Application will start after dawn, as stated by the National Weather Service, and continue until completed or when weather conditions and safety concerns are not acceptable for the safe operation of the treatment. Application would restart on the same day should weather conditions and safety concerns return to acceptable levels for a safe operation.
I Application will stop when wind speeds exceed 10 mph or cause the treatment to drift off the project location.
J. Application of Btk will be suspended when school buses are in the site and when children are outside on school grounds. The State Entomologist or his agent will contact the local school district for bus schedules at the project site and inform the vendor when treatment will stop.
K. Treatment of Btk will be done when weather reports indicate there will be no rain for a minimum of 24 hours, preferably 48 hours. However, depending on weather patterns and development of larva and foliage, a 6-hour minimum period of no rain will be used as decided by the State Entomologist or his agent to allow application.
L. Low relative humidity below 50% and high temperature above 80 F may stop application. Treatment may continue at temperatures above 80 F if there are no thermal inversions.
M. Treatment of pheromone flakes will be done when weather reports indicate there will be not threat of rain within one hour after treatment.

4.3 Pilot Briefing

A. Review Section 3.3 A. – Pre-treatment Training with Contractor
B. Update pilot on any changes in treatment site boundaries, hazards, or other safety concerns.
C. Insure navigation system and treatment file is properly linked.
D. Check treatment file in the navigation system to insure the file is the most recent version and contains the correct treatment boundaries should there be any changes in boundaries to mitigate issues regarding the treatment sites.
E. Review treatment application at end of application or end of day.

4.4 Mixing and Loading

A. Btk will be applied undiluted, as per the label or recommendations of the manufacturer. The rate is between 24 to 38BIU/acre.
B. The pheromone flakes will be applied per the label, the recommendations of the manufacturer or the recommendation of the USDA Forest Service. The rate is 15 or 6 grams AI/acre unless amended by manufacturer or USDA Forest Service.
C. The treatment material will be mixed according to the label directions.
D. Mixing and loading shall occur under the supervision of the State Entomologist or his agent. The State Entomologist and the contractor will mutually agree upon the site(s) for loading and mixing. The site(s) shall be located in proximity to the treatment site(s).
E. Excess treatment material from each application shall be disposed of according to the label and all state and federal safety guidelines by the vendor.
F. The contractor provides equipment for mixing, loading.
G. Contractor is responsible to clean up treatment material and fuel spills.
H. Contractor provides a safety plan for spills.
I. Contractor provides safety clothes and equipment for the contractor's employees
J. Contractor provides the following in written form for each application:

1. Nozzle type/number and number of nozzle per aircraft.
2. Swath width.
3. Gallon per minute.
4. PSI.
5. Height about project area.
6. Air speed during application.

7. Pilot name and license # (FAA & Pesticide), years of experience.
8. Aircraft type/model/number (FAA).
9. Treatment materials applied through sprayer just prior to this project.

K. The load site observer will record information about mixing and loading
   1. amount of treatment material loaded,
   2. amount of treatment material remaining,
   3. amount and type of sticker loaded.

L. The load site observer will inspect the treatment equipment for:
   1. treatment equipment clean,
   2. new and clean nozzles installed,
   3. in line screen, clean and no finer that 30 mesh,
   4. tanks, hoses and pump on treatment aircraft checked for leaks,
   5. treatment equipment operating properly.

M. The load site observer tests radio communication between the ground and air.

4.5 Application Monitoring

A. Treatment site observer will record and monitor the following during application:
   1. temperature
   2. relative humidity
   3. wind speed.

B. Treatment site observer will set and recover spray deposit cards, if utilized for a treatment site.

C. Treatment site observer will observe treatment emitting from aircraft. The pilot will be notified and treatment will be halted if the pattern and coverage are seriously altered.

D. Treatment site observer will observe flight path, start/stop points for application, note any problems or deviations and advise pilot, treatment site coordinator and load site observer of the problems or deviations.

E. Treatment site coordinator will approve start of application to the site and release of the pilot to go to the next site.

F. Treatment site observers will visually verify that the proper boundaries are used. (See Section 3.3 B. - Pre-treatment Training for Observers).

G. Load site observer will receive digital files that record treatment application from the applicator at (see Section 1.9 – Load site observer) the end of each treatment day or when a treatment is completed. Load site observer will view digital files for accuracy of application & advise applicator of any errors or problems.

5.0 Public Notification

5.1 Residences in the treatment sites will be notified of the decision to proceed with the project two weeks before treatment by direct mail. The residences and the public will also be notified approximately two weeks before treatment by using news releases via local newspapers and radio/TV stations.

5.2 The media will be notified three days before starting treatment and asked to provide information on the treatment and the treatment date to the residences in the treatment sites and the public.

5.3 Local emergency agencies will be notified of the treatment date and time and given information or contact persons to direct questions.

5.4 Offices of county/municipal officials (extension agents, mayor, etc.) will be notified of the treatment date and time prior to treatment. Contact persons and other information will be provided as needed

5.5 Notification will contain information pertinent to the specific treatment, treatment schedule, and precautions to be taken.

6.0 Security

6.1 Treatment Product

A. The State will require a certificate of analysis from the manufacturer prior to application.
B. The manufacturer will provide a chain of custody document to the contractor upon delivery of the product.
C. The manufacturer provides factory seals at the point of origin.
D. The contractor will retain the chain of custody document and provide it to the State agent prior to application.
E. The contractor must notify the State agent when the product has arrived and is in his/her custody.
F. Upon delivery the contractor must provide a storage facility for the product that is locked and secured.
G. A State agent will inspect the product within 24 hours of notification that the contractor has received the product.
H. Upon notification that the contractor has received the product, the State agent shall notify responsible security officials (police, sheriff and/or conservation officers) where the product is located and request the location be monitored periodically until the treatment project has been officially completed.

6.2 Aircraft Security

A. The aircraft will be secured in a hanger or disabled when not in use.
B. The spray equipment – hoppers, tanks, pumps, hoses and mixing equipment – will be secured in a hanger or sealed at the end of each workday.
C. The airport facility will be monitored periodically until the treatment project has been officially completed.

6.3 Pilot

A. The pilot must have FAA approval for restricted areas.

6.4 Airport Security

A. Access to the airport loading and storage areas will be restricted.
B. Identification will be required for access to airport loading and storage areas, and other operation sites.

7.0 Safety

7.1 Handling of Treatment Material

A. Contractor will provide protective clothing for his employees.
B. Contractor will provide safety equipment at the load site for spills of treatment material.
C. Contractor provides a safety plan for spills.
D. Contractor is responsible to clean up treatment material spills.

7.2 Accidental Spill

The contractor will provide a spill plan for the loading/mixing of the treatment material and for fueling the aircraft. This plan will be followed in case of an accidental spill. In the event a spill does occur or pilot has to dump the treatment material, the following will be notified:

- Safety Officer of the DNR
- State Chemist Office
- State Police
- Dept. of Environmental Management - Spill Line - 888-233-7745
- Local authorities - police, fire department, hospitals as warranted
- USDA - Forest Service
- CHEMTREC (Chemical Transportation Emergency Center) - 800-424-9300
- National Response Center (if spill occurs on a highway) 800-424-8802

7.3 Safety Training

Safety training will be incorporated into the pre treatment training for treatment site and load site observers and other personnel. The Work and Safety Plan will be reviewed at the time of application. Individuals will review emergency procedures, phone numbers, the communication procedure, the location of emergency equipment, and the monitoring procedure.

7.4 Accident Reporting

In the event of an accident, the treatment site observer or other project personnel will notify the State Police, 911 services if available in project area, county/municipal police, fire department, hospital and EMS for emergency situations. Also notified will be those listed under accidental spill.

Project personnel will assist in the emergency situation as needed.

EMERGENCY TELEPHONE NUMBERS
2007 COOPERATIVE GYPSY MOTH PROJECT

DELAWARE COUNTY

SITE (Treatment Method):	NEBO (Btk)
Sheriff Department Delaware County	911 or 765-747-7878
City Police (Yorktown) City Police (Muncie)	765-759-7760 765-747-4838
State Police	911 or 765-369-2561 800-761-2985
Fire Department and EMS Mount Pleasant Township- Fire and Rescue	911 or 765-759-5836
DNR Law Enforcement District 4 Headquarters (C.O.) 3734 Mounds Road, Anderson, IN 46017	765-649-1062
Hospital: Ball Memorial Hospital 120 W Charles Street, Muncie, IN 47305	765-747-3420
Poison Control	800-382-9097
Dept. of Environmental Management - Spill Line	888-233-7745
CHEMTREC (Chemical Transportation Emergency Center)	800-424-9300
National Response Center (if spill occurs on a highway)	800-424-8802
Health Department	765-747-7721
Extension Agent - David Clamme	765-747-7732
Town Manager – Yorktown (Timothy Kelty) Mayor – Muncie (Dan Canan)	765-759-4003 765-747-4712
FAA Johnson Field Tower – contact Ray Bean	765-282-5328
Nearest Airport: Johnson Field Airport –manager Carl Simmons 311 West Carl Simmons Road, Muncie, IN 47303	765-747-5690